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


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Sun builds software to slice up servers

The next version of Solaris will include software for dividing servers up into independent partitions, a departure for the company.



Stephen Shankland
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4 min read

SAN FRANCISCO--With its next version of the Solaris operating system, Sun Microsystems plans to take a new direction with its technology to divide a server into a large number of independent partitions.

The company is moving, for the first time, toward using software and not just hardware to create partitions. The software technology, called "zones," is scheduled to arrive in Solaris 10 in 2004, Jonathan Schwartz, head of Sun's software group, said Wednesday in a meeting with reporters here. It is an expansion of the "containers" technology in Solaris 9, which gives a particular group of computing processes-- known as a task--guaranteed access to resources such as memory.

With the zones technology, code-named Kevlar, a server is effectively divided into independent sections, each appearing to have its own operating system, each of which can be administered or rebooted separately, Schwartz said.

Partitions, a technology that has matured on expensive mainframe servers, let a customer run several chores on a single system more gracefully. Ideally, partitions can be created on the fly or their sizes can be changed to accommodate changing workload demands.

There is one major difference between Sun's strategy with partitions and that of its rivals, according to Schwartz. Solaris' partitioning capabilities work not only on Sun servers using the company's own UltraSparc processors, but also on servers using x86 processors such as Intel's Xeon or Advanced Micro Devices' Opteron, he said.

"It'll work on a machine bought from (electronics retailer) Fry's" as well as servers from companies such as Hewlett-Packard or Dell, Schwartz said. "Every innovation to Solaris-Sparc will be synchronously added to Solaris-Opteron and Solaris-x86."

The zones technology could be a compelling reason for customers to embrace Solaris on x86 processors, because it brings a useful but hard-to-get feature to Intel servers. That version of the operating system has languished within Sun and the combination is outsold by Linux, even in Sun's product line.

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"This potentially looks like a reason to go for Solaris on x86 for large-scale infrastructures," RedMonk analyst James Governor said.

IBM and HP offer partitioning on Intel servers today through use of VMware software, which can run Linux or Microsoft Windows in separate partitions. Microsoft is working on partitioning technology obtained through its acquisition of Connectix.

Getting into the zone

Partitioning is increasingly important because it helps enable two cost-cutting moves: the consolidation of numerous small servers onto a single easier-to-manage machine, and the use of utility computing technology, which often requires computers in formerly separate domains to be united.

"Everybody wants to be a mainframe," Governor said, and Sun isn't the only one working on the challenge. "It's still pretty early days for IBM and HP in this area. They have mainframe envy, too," when it comes to Unix servers.

Sun, based in Santa Clara, Calif., was a pioneer in offering partitions in Unix servers, using the 64-processor E10000 it acquired from Cray in the 1990s. Those partitions, however, were so-called physical partitions, based in how the hardware worked. Software-based "logical partitions"--the approach generally favored by IBM--have not been an option for Sun customers. Hewlett-Packard's partitioning technology includes both options.

In earlier years, Sun argued physical partitions were better, because the electrical isolation between partitions guaranteed that one partition would keep on working even if another collapsed as a result of major hardware failure. Now, though, Sun is changing its tune, saying customers want both types.

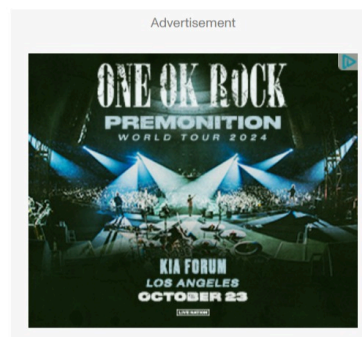
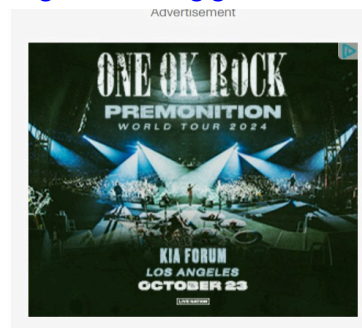
With Sun's zones technology, a single server will be able to have hundreds of zones, Schwartz said. An administrator of one zone won't be able to affect another zone, he added.

Tim Marsland, the chief technology officer of Sun's operating platform group, said it would be possible to reassign resources to zones in response to changing demands. The assignment will be done either manually or automatically, according to preset policies. In addition, the technology will feature a read-only shared file system, so that partitions will be able to draw upon the same data or files. That means the data won't have to be stored multiple times for each partition, according to Marsland.

Zones won't be fully independent, though, Sun said. They often will share the same kernel, or heart, of Solaris. If something causes that kernel to crash, one partition's problem could affect another.

Schwartz said other partition technologies, such as IBM's Hypervisor layer, have equivalent issues. "There's a single point of failure for every global technology," he said.

In recent months, Sun executives have argued that the company has shown loyalty to its Unix customers by supporting a version of Solaris for the widely used Intel servers based on Xeon chips. For that market, IBM and Hewlett-Packard advocate use of Linux or Windows; they support their versions of Unix only on machines running in-house processors or--in HP's case--running Intel's high-end, but not widely used, Itanium.



Sun supports Linux and Xeon servers, but its own software and hardware come first. "We are in the business to sell our intellectual property, not to resell others," Schwartz said.

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